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CLAIMS

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1. A method of detecting a Region of Interest in an image data set, especially digitalized X-ray image, the method comprising the steps of:
   a. extracting phase information from the image data,
   b. using said phase information for differentiating between different lines and edges, and
   c. skewing said lines towards a centre.

2. The method of claim 1, wherein said step a. comprises extracting an orientation estimate.

3. The method of claim 1, wherein said step b. comprises additional information on a magnitude from a filter answer.

4. The method of claim 1, wherein said region of interest is stellate lesions and said image data is a digitalized mammogram,

5. The method of claim 4 comprising the alternative steps of:
   a. obtaining an image data corresponding to said mammogram (901);
   b. obtaining an image mask (902);
   c. substantially uniformly sampling (903) the digital image inside said mask and producing sample points;
   d. calculating (904) for each sample point a characteristic;
   e. selecting (905) a number of sampling points most likely to correspond to a spiculated lesion;
   f. applying (906) a segmentation procedure to the original digital image at said selected sampling points;
   g. extracting (907) new characteristics from each segmented area and obtaining a feature vector;
   h. classifying (908) each feature vector as suspicious or non-suspicious using a classification machine; and
   i. examining (909) said suspicious areas.

AMENDED SHEET

6. The method of claim 5 wherein said characteristics in said step d comprises one or several of:
   - contrast,
   - two measures of spiculatedness, and
   - two measures of edge orientations.

7. The method of claim 6 wherein said contrast, is derived as a ratio between an intensity inside a circle with a radius r1 and a washer shaped background area with inner radius r1 and an outer radius r2.

8. The method of claim 6 wherein said two measures of spiculatedness are derived from a histogram of angle differences obtained using a filtration method that yields phase information together with orientation estimates.

9. The method of claim 6, wherein said two measures of edge orientations are derived from a histogram of angle differences obtained using a filtration method that yields phase information together with orientation estimates.

10. The method of claim 5, wherein said step e is provided using a support vector machine or an artificial neural network.

11. The method of claim 6, wherein said classification of each feature vector is provided using a classification machine.

12. The method according to any of claims 5-10, wherein the entire image is sampled.

13. The method of claim 5, wherein each node in the applied sampling grid is evaluated in terms of contrast and spiculation.

14. An arrangement (800) for detecting a Region of Interest in an image data set, especially digitalized X-ray image, which arrangement extracts phase information from said image, uses said phase information for differentiating between different lines and edges, and skews said lines towards a centre, the arrangement

comprising: a processing unit (801), a module (802) for obtaining image masks, a sampling module (803), a calculating module (804), filtration module (805), a classification module (806) and a support vector machine and/or artificial neural network module (807).

15. The arrangement of claim 14, wherein said filtration module is a set of quadrature-filter.

16. An x-ray apparatus comprising an arrangement according to any of claims 12-13.

17. A computer unit comprising a processing unit, a memory unit, storage unit, said computer unit being operatively arranged with an instruction set to acquire an image data set, especially digitalized x-ray image, said instruction set having procedures for: detecting a Region of Interest in a said image data, extracting phase information from said image, obtaining image masks, sampling, calculating, filtration, a classification and supporting vector and/or artificial neural network.